

An L-Band Radio Frequency Interference (RFI) Detection and Mitigation Testbed, Phase II

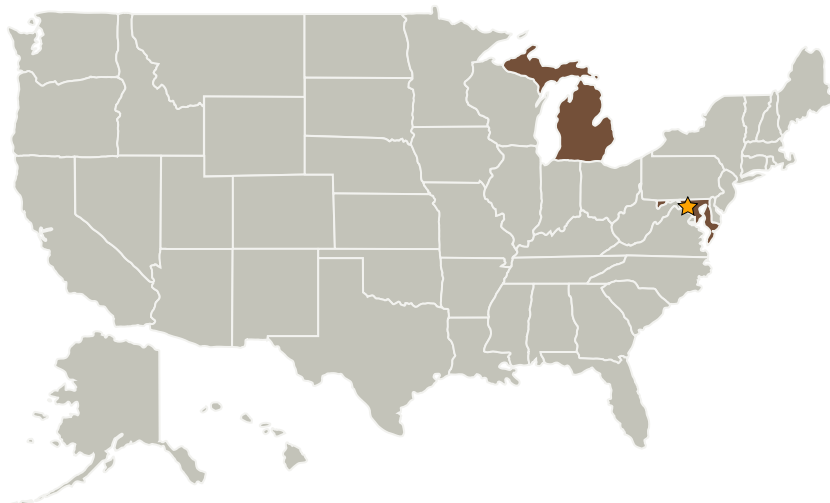
Completed Technology Project (2005 - 2007)



Project Introduction

Radio Frequency Interference (RFI) can render microwave radiometer measurements useless. We have proposed a method and an architecture that can be used to identify sources of RFI and identify an optimal scheme for the mitigation of RFI. The system consists of a fully functional digital radiometer that can collect data in the field and pipe the pre-detected signal into, for example, a spectrum analyzer for in-situ analysis or into removable flash memory for later analysis. The digital radiometer employs a Field Programmable Gate Array (FPGA) for employing flexible mitigation strategies. It will also use a programmable noise source for generation of artificial RFI in the laboratory setting, allowing for efficient mitigation algorithm development in a laboratory setting, independent of actual RFI, which may be intermittent. Thus the proposed instrument can be used to identify RFI, develop mitigation approaches for RFI, and validate the mitigation strategy. The Phase II effort will fabricate and test an L-band version of the proposed system.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
★ Goddard Space Flight Center (GSFC)	Lead Organization	NASA Center	Greenbelt, Maryland
EMAG Technologies, Inc.	Supporting Organization	Industry	Ann Arbor, Michigan



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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Goddard Space Flight Center (GSFC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Primary U.S. Work Locations

Maryland

Michigan

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Technology Areas

Primary:

- TX05 Communications, Navigation, and Orbital Debris Tracking and Characterization Systems
 - └ TX05.2 Radio Frequency
 - └ TX05.2.1 Spectrum-Efficiency